

N. Y., 23rd, 28th; Palermo, N. Y., 28th; Salt Lake City, Utah, 10th,  $\frac{1}{2}$  in.; Boise City, Idaho, 25th,  $\frac{1}{2}$  in.; Winnemucca, Nev., 25th, one-tenth in.; Denver, Col., 11th; Virginia City, Mon., 9th, 25th,  $\frac{1}{2}$  in.; North Platte, Neb., 10th,  $\frac{1}{2}$  in.; Pembina, Dak., 26th,  $\frac{1}{2}$  in.

## PRECIPITATION.

On chart No. III is illustrated the general distribution of the rain-fall for the month. On the left-side of the same chart is a table giving the average precipitation for September, by districts, which shows a decided excess over the region traversed by storm-area No. IV, namely, from the South Atlantic States to Lower Lake region and St. Lawrence valley. A large excess is also observable in Oregon; elsewhere there is a general deficiency. The average for Tennessee and the Gulf States is not obtainable, owing to missing reports in the Lower Mississippi valley, but individual reports show a decided deficiency, amounting to over two inches in Tennessee, over three in Arkansas and seven and a half at Indianola, Texas; others from one to two inches.

*Special Heavy Rains.*—1st, Jacksonville, 2.32 in. (in 3 hours.) 3rd, Blooming-grove, Pa., 3.00 in. 4th, Emory Grove, Md., 3.00 in. (in 4 hours;) Egypt, Pa., 4.20 in. 5th, Smithville, 2.35 in. (in about 1 hour;) New Haven, 6.00 in. (in about 6 hours.) 6th, Thomasville, Ga., 3.04 in. 9th, Jacksonville, 3.38 in. (in 6 hours.) 10th, St. Francis Barracks, Fla., 5.60 in. 10th and 11th, Jacksonville, 4.29 in. 11th and 12th, Charleston, 5.03 in. 11th, Savannah, 3.63 in. 11th to 13th, Buffalo, 3.95 in.; Erie, 5.11 in.; Hudson, Ohio, 5.85 in. 11th and 12th, Augusta, 4.76 in.; Lenoir, N. C., 7.10 in. 12th, Wytheville, Va., 7.02 in.; Wilmington, N. C., 4.00 in. 12th and 13th, Cleveland, 4.44 in.; Pittsburg, 4.17 in.; Morgantown, 2.54 in.; New Castle, Pa., 7.40 in.; Oglethorpe Barracks, Ga., 4.47 in. 12th to 14th, Mt. Forest, Can., 8.60 in. 23rd, Mobile, 2.36 in. (in 4 hours.) 2nd, Jacksonville, 2.43 in.

*Largest Monthly Rain-falls.*—At Jacksonville, Fla., 21.12 in.; Daytona, Fla., 19.45 in.; Mount Forest, Can., 15.73 in.; Mayport, Fla., 13.28 in.; St. Augustine, Fla., 11.96 in.; St. Mary's, Ga., 10.19 in.; Newcastle, Pa., 10.00 in.; Cleveland, Ohio, 9.30 in.; Alpena, Mich., 9.06 in.; Oglethorpe Barracks, Ga., 8.88 in.; Punta Rassa, Fla., 8.77 in.; Augusta, Ga., 8.83 in.; Charleston, S. C., 8.28 in.; Key West, Fla., 8.04 in.; Smithville, N. C., 7.86 in.; New Haven, Conn., 7.67 in.; Mount Washington, N. H., 7.37 in.

*Smallest Monthly Rainfalls.*—At Los Angeles, San Diego, Fresno and Visalia, Cal., and Yuma, Ariz., none; Fort Warren, Mass., trace; Edinburg, Tex., 0.02 in.; Tucson, Ariz., and Fort Craig, N. M., 0.08 in.; Dover, Del., 0.10 in.; Austin, Tex., and Fort Union, N. M., 0.18 in.; Phoenix, Ariz., 0.19 in.; Camp Grant, Ariz., 0.20 in.; La Mesilla and Fort Lyon, Cal., 0.21 in.; Boise City, Idaho, 0.27 in.; Sacramento, Cal., 0.29 in.; St. Inigoes, Md., and Terrill, Tex., 0.31 in.; Decatur, Tex., 0.37 in.; Stockton and Fredricksburg, Tex., 0.38 in.; Wickenburg, Ariz., 0.39 in.; Red Bluff, Cal., 0.42 in.; San Francisco, Cal., 0.55 in.

*Floods and High Tides.*—The most serious floods and high tides during the month occurred during the passage of storm No. IV from Georgia to Canada. The following notes will serve to show the severity of these: Jacksonville, Fla., 11th, the river backed into streets, almost entirely suspending business. Savannah, Ga., 11th, rice-plantations along the Savannah, Ogeechee and Altamaha rivers, completely inundated, damage to rice crop estimated at \$400,000. Fayetteville, N. C., 12th, 13th, Cape Fear river flooded low lands, and destroyed about one-half the crops; 12th, all streams flooded in southwest Virginia and Piedmont region, doing much damage—bridges and trestles swept away between Smythe and Roanoke Cos. Wytheville, Va., 12th, bridge over Red creek carried away, also several dams, all the trees, houses, crops, corn, haystacks, &c., along the banks of New river and Red creek, both streams several feet higher than ever before known, several persons drowned. 13th, above Lynchburg, all streams swollen; at 10 p. m., James river had risen 15 feet, and was rising 6 to 8 inches per hour; but little damage occurred. Dover Mines, Va., 13th, freshet in James river, highest water ever known here. During the night of the 12th, at Annapolis, the streets about the docks were flooded. At Baltimore, water overflowed docks and flooded streets; Light street submerged several feet deep. Cannelton, W. Va., 13th, heavy rains in mountain country which supplies Gawley, New and Kanawha rivers produced heavy freshets in these rivers; crops and lumber washed away; washouts on western division of Chesapeake and Ohio R. R., between White Sulphur and Huntington, probably 50 miles of line submerged. 14th, the Kanawha river rose higher than during flood of 1861, and Charleston, W. Va., was partly submerged; the Holston river rose 15 feet, doing much damage to crops. In northwestern Pennsylvania and eastern Ohio the floods were specially severe; in Erie Co., Pa., Connaught Lake rose five feet, bridges &c. washed away; Elk creek rose six to eight feet; Oil City on the Alleghany river, partly flooded; Meadville, Pa., on French creek, flooded by creek overflowing banks; 3 men killed by washout on A. & G. W. R. R., 3 miles to the SW.; at Newcastle, Pa., 11th to 13th, the Shenango, Mahoning and Neshannock rivers overflowed banks, all the bottom lands under water, fences, hay and sheep swept away, and a number of bridges on Mahoning river destroyed. At Warren, O., 14th, 5 a. m., the Mahoning river reached the highest point ever known, flooding all lower portion of city, and doing immense damage—great damage also occurred at Campbellsport, Deerfield, Garrettsville, Windham and Mantua. Pittsburg, Pa., 13th, city damaged by flood. Youngstown, O., night of 12th, city flooded, principal streets, 8 feet deep. Country between there and Hazleton a vast lake—railroad embankment swept away. Akron, O., streams higher than for past 25 years. Chagrin Falls, river higher than ever known before, town flooded, dams and bridges washed away. Quaker City, O., flooded. Ashtabula, Ohio, 13th, 9 a. m., water 13 feet above low water; mills at Sheffield and Kingsville carried away and numerous bridges

and culverts swept into lake; rivers in this vicinity not as high since 1837. Alliance, Stark Co. Ohio, creeks overflowed; lowlands deluged. At Minerva, Ohio, the water rose to a depth equal to the great flood of 1861. Cleveland Ohio, 13th, houses flooded. Erie Pa., 12th, 13th, Mill creek overflowed; dams, culverts and bridges swept away. Oswego, N. Y., 14th, 100 feet of pier on east side of harbor washed away. In Ontario, Sept. 13th, at Oakville, considerable damage by floods and wash-outs. St. Catharines, lower half of Welland canal entirely submerged; navigation suspended until 23d. Markham, heaviest flood since 1851—bridges on river Rouge carried away—Toronto and Nipissing rail-road badly washed. In Scarboro and Toronto Cos., nearly all bridges were swept away. At Brantford, Sept. 15th, large amount of property destroyed by flood. W. Brantford, entirely submerged; iron bridge across Grand river gave way. At Galt, Grand river overflowed banks, doing much damage.

*Drought*—Corsicana, Tex., 30th, recent rains have relieved the drought in some sections, while in others farmers are compelled to drive their stock many miles to water. Independence, Kan., 30th, corn crop severely injured by drought. Lebanon, Mo., 25th, tobacco crop almost a failure. Contoocookville, N. H., 30th, streams lower than ever before for many years, many wells have failed.

*Hail*.—Winnemucca, Nev., 16th; Pike's Peak, 1st, 2d, 8th, 19th, 30th; Stockton, Tex., 18th; Milwaukee, 25th; Chicago, 25th; Toledo, 2d; Logansport, Ind., 24th; Fort Hays, Kan., 19th; Camp Douglass, Utah, 18th; Fort Fred. Steele, Wy. Ty., 8th; Summitt, Col., 6, 18th; Geneseo, Ill., 24th; Milford, Ind., 25th; Guttenburg, Iowa, 19th, 25th; Litchfield, Mich., 2d; Frankfort, Mo., 26th; Macon, Mo., 23d; Pierce City, Mo., 25th; Ashley, Mo., 25th; Plattsmouth, Neb., 19th; Genoa, Neb., 5th; Acton, N. J., 4th; Flushing, N. Y., 28th.

*Rainy Days*.—The number of days on which rain or snow has fallen, varies as follows: New England, 7 to 15; Middle States, 7 to 13; South Atlantic States, 7 to 20; Gulf States, 2 to 18; Ohio valley and Tennessee, 7 to 13; Lower Lake region, 9 to 15; Upper Lake region, 6 to 18; Upper Mississippi valley, 6 to 13; Lower Missouri valley, 5 to 8; Northwest, 8 to 12; Rocky Mountains, 6 to 11; Western Plateau, 0 to 8; Pacific coast, 0 to 8.

*Cloudy Days*.—For New England, the number varies from 6 to 13; Middle States, 6 to 14; South Atlantic States, 4 to 15; Gulf States, 2 to 9; Ohio valley and Tennessee, 4 to 6; Lower Lake region, 5 to 9; Upper Lake region, 6 to 13; Upper Mississippi valley, 0 to 9; Lower Missouri valley, 4 to 9; extreme Northwest, 8 to 14; Rocky Mountains, 1 to 11; Western Plateau, 0 to 5.

*Snow* is reported to have fallen as follows: At Ft. Fred Steele, Wy. Ty., 9th; Summit, Col., 7th, ground about station covered with snow; Boise City, Idaho, 27th, 30th, on Boise Mts.; Winnemucca, Nev., 30th, all the highest peaks in sight capped with snow; Pikes Peak, Col., 1st, 4th, 5th, 6th, 7th, 30th; Marquette, Mich., 21st; Pembina, Dak., 20th; Lead City, Dak., 8th, 9th, 19th; Virginia City, Mont., 7th, on mts., 8th, 24th, 30th; Coalville, Utah, 30th, first snow on mts., SW. of station.

*Rain from a Cloudless Sky*.—Des Moines, Iowa, 17th.

## RELATIVE HUMIDITY.

The average percentage of relative humidity for the month ranges as follows: New England, 70 to 85; Middle Atlantic States, 68 to 82; South Atlantic States, 75 to 81; East Gulf States, 66 to 78; West Gulf States, 64 to 76; Lower Lake region, 70 to 74; Upper Lake region, 67 to 78; Ohio Valley and Tennessee, 63 to 73; Upper Mississippi valley, 60 to 73; Lower Missouri valley, 61 to 67; Red River of the North valley, 74 to 79; Eastern slope, from Dakota to interior of Texas, 45 to 67; Western Plateau, 23 to 49; California, 41 to 76. High stations report the following, not corrected for altitude: Mt. Washington, 83; Cheyenne, 51; Denver, 44; Santa Fe, 37; Virginia City, 54; Colorado Springs, 46.

## WINDS.

The prevailing winds at the Signal Service stations are shown by arrows on chart No. II, by an examination of which it will be seen that they have been northeasterly in the Atlantic States and generally southerly west of the Alleghanies.

*Total Movements of the Air*.—The following are the *largest* monthly movements recorded at the Signal Service stations, viz: Cape Lookout, 12,641 miles; Kittyhawk, 11,385; Portsmouth, N. C., 11,353; Sandy Hook, 10,278; Key West, 10,142; North Platte, 10,018; Cape Hatteras, 10,010; Cape Henry, 9,791; Dodge City, 9,703; Breckenridge, 9,463; Cape May, 9,377; Barnegat, 9,330; Atlantic City, 8,931. The *smallest* are: Knoxville, 1,380 miles; Visalia, Cal., 1,391; La Mesilla, N. M., 1,642; Nashville, 1,953; Uvalde, Tex., 1,987; Lynchburg, 2,045; Roseburg, Or., 2,069; Eagle Pass, Tex., 2,369; Shreveport, La., 2,797; Virginia City, Mont., 2,820; Fredericksburg, Tex., 2,822. The anemometer on the Summit of Mt. Washington was stopped by frost on the 15th, since when no continuous record has been obtainable.

*Local Storms*.—5th, New York and vicinity, severe thunder-storm; 3 a. m., house struck by lightning; at Greenpoint, rain fell in torrents; Brooklyn, 4 a. m., oil works struck and fired; at East Marion, house struck by lightning; Jersey City, Railroad washed, and flag pole struck by lightning. 6th, Ardenia, N. Y., afternoon, violent gale, uprooting trees, &c., path hundred yards wide. 12th, Goldsboro, Wayne Co., N. C., "terrific and destructive tornado, passed three miles from city about 7 a. m., path hundred yards wide;